

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1. (Currently Amended) A plasma display device comprising ~~having a~~ plasma display panel including at least a plurality of discharge cells each having at least an ~~sustain~~ electrode pair for generating a ~~sustain~~ discharge for a light emission display, _____ wherein ~~said plasma display device is configured to apply a~~ sustain pulse voltage, which is applied between said ~~sustain~~ electrode pair in a respective one of said plurality of discharge cells to generate a ~~the~~ sustain discharge, comprises ~~in a~~ ~~respective one of the following operating modes selected based upon use of said~~ plasma display device:

(a) ~~generating a pre-discharge and then a main discharge;~~

(b) ~~generating a main discharge without a pre-discharge preceding said main discharge; and~~

(c) ~~switching between the mode (a) and the mode (b);~~

~~wherein at least a first-waveform voltage and a second-waveform voltage, are provided for use as said sustain pulse voltage, and~~

_____ said first-waveform voltage is composed of one of (1) a combination of a first portion having a major portion of a first voltage and a second portion having a major

portion of a second voltage higher than said first voltage and (2) a second portion having a major portion of said second voltage,

_____ said second-waveform voltage is composed of a third portion having a major portion of a third voltage and a fourth portion having a major portion of a fourth voltage higher than said third voltage,

said first-waveform voltage and said second-waveform voltage satisfy the following conditions (i) and (ii):

(i) at least one of the following inequalities is satisfied:

_____ said third voltage > said first voltage, or a time duration of said third portion, T_3 ($T_3 > 0$), > a time duration of said first portion, T_1 ($T_1 > 0$), when said first-waveform voltage is composed of said combination ~~which includes 0 seconds,~~ and

(ii) at least one of the following inequalities is satisfied:

said fourth voltage > said second voltage, or a time duration of said fourth portion, T_4 ($T_4 > 0$), > a time duration of said second portion, T_2 ($T_2 > 0$) ~~which includes 0 seconds,~~

~~wherein said plasma display device is provided with a circuit for switching said sustain pulse voltage from said first-waveform voltage to said second-waveform voltage based upon an increase of an amount of a load factor, where said load factor is a ratio of a number of lighted ones of said plurality of discharge cells during said sustain discharge to a total number of said plurality of discharge cells, and~~

_____ wherein said first and third voltages are established by ~~using at least a switch~~
~~and one of a~~ applying a power supply voltage and ground potential to electrodes
composing the electrode pair.

2. (Currently Amended) ~~A~~The plasma display device according to claim 1:
~~having a plasma display panel including at least a plurality of discharge cells each~~
~~having at least a sustain electrode pair for generating sustain discharge for a light~~
~~emission display,~~
~~wherein said plasma display device is configured to apply a sustain pulse voltage~~
~~between said sustain electrode pair in a respective one of said plurality of discharge~~
~~cells to generate a sustain discharge in a respective one of the following operating~~
~~modes selected based upon use of said plasma display device:~~
~~(a) generating a pre discharge and then a main discharge;~~
~~(b) generating a main discharge without a pre discharge preceding said main~~
~~discharge; and~~
~~(c) switching between the mode (a) and the mode (b),~~
~~wherein at least a first waveform voltage and a second waveform voltage are~~
~~provided for use as said sustain pulse voltage,~~
~~— said first waveform voltage is composed of a first portion having a major portion~~
~~of a first voltage and a second portion having a major portion of a second voltage~~
~~higher than said first voltage,~~

~~—said second waveform voltage is composed of a third portion having a major portion of a third voltage and a fourth portion having a major portion of a fourth voltage higher than said third voltage,~~

~~—said first waveform voltage and said second waveform voltage satisfy the following conditions (i) and (ii):~~

~~—(i) at least one of the following inequalities is satisfied:~~

~~said third voltage > said first voltage,~~

~~a time duration of said third portion > a time duration of said first portion which includes 0 seconds, and~~

~~—(ii) at least one of the following inequalities is satisfied:~~

~~said fourth voltage > said second voltage,~~

~~a time duration of said fourth portion > a time duration of said second portion which includes 0 seconds,~~

~~wherein said plasma display device is provided with a circuit for switching said sustain pulse voltage from said first waveform voltage to said second waveform voltage based upon an increase of an amount of a load factor, where said load factor is a ratio of a number of lighted ones of said plurality of discharge cells during said sustain discharge to a total number of said plurality of discharge cells, and~~
wherein two electrodes of said sustain electrode pair are supplied with two voltages opposite in polarity from each other, respectively.

3. (Currently Amended) A plasma display device ~~having~~ comprising a plasma display panel including at least a plurality of discharge cells each having at least an sustain-electrode pair for generating a sustain discharge for a light emission display,

~~wherein said plasma display device is configured to apply a sustain pulse voltage, which is applied between said sustain-electrode pair in a respective one of said plurality of discharge cells to generate a~~ the sustain discharge, comprises in a ~~respective one of the following operating modes selected based upon use of said plasma display device:~~

~~(a) generating a pre-discharge and then a main discharge;~~

~~(b) generating a main discharge without a pre-discharge preceding said main discharge; and~~

~~(c) switching between the mode (a) and the mode (b);~~

~~wherein at least a first-waveform voltage and a second-waveform voltage are provided for use as said sustain pulse voltage,~~

~~—said first-waveform voltage is composed of a first portion having a major portion of a first voltage and a second portion having a major portion of a second voltage higher than said first voltage, and~~

~~—said second-waveform voltage is composed of a third portion having a major portion of a third voltage and a fourth portion having a major portion of a fourth voltage higher than said third voltage,~~

~~—said first waveform voltage and said second waveform voltage satisfy the following conditions (i) and (ii):~~

~~—(i) at least one of the following inequalities is satisfied:~~

~~said third voltage > said first voltage,~~

~~a time duration of said third portion > a time duration of said first portion which includes 0 seconds, and~~

~~—(ii) at least one of the following inequalities is satisfied:~~

~~said fourth voltage > said second voltage,~~

~~a time duration of said fourth portion > a time duration of said second portion which includes 0 seconds,~~

~~wherein said plasma display device is provided with a circuit for switching said sustain pulse voltage from said first waveform voltage to said second waveform voltage based upon an increase of an amount of a load factor, where said load factor is a ratio of a number of lighted ones of said plurality of discharge cells during said sustain discharge to a total number of said plurality of discharge cells, and wherein said first and third voltages are is established by using an inductance coupled to one of a power supply and ground potential without having a condenser coupled therebetween.~~

4. Currently Amended) A plasma display device ~~having~~ comprising a plasma display panel including at least a plurality of discharge cells each having at least an

sustain-electrode pair for generating a sustain discharge for a light emission display and an address electrode for selecting one to be lighted from among said plurality of discharge cells,

~~wherein said plasma display device is configured to apply a sustain pulse voltage between said sustain electrode pair in a respective one of said plurality of discharge cells to generate a sustain discharge in a respective one of the following operating modes selected based upon use of said plasma display device:~~

- ~~(a) generating a pre-discharge and then a main discharge;~~
- ~~(b) generating a main discharge without a pre-discharge preceding said main discharge; and~~
- ~~(c) switching between the mode (a) and the mode (b);~~

_____ wherein said address electrode is supplied with an address pulse voltage which rises in a sustain-pulse-open period during which said electrode pair is not supplied with a voltage equal to or higher than a predetermined voltage,
~~synchronized with said sustain pulse voltage during said sustain discharge, and~~
when said address pulse voltage is increased based upon an increase of an amount of a load factor, where said a load factor, which is a ratio of a number of lighted ones of said plurality of discharge cells during said sustain discharge to a total number of said plurality of discharge cells, exceeds a predetermined value, the sustain pulse voltage is increased, the address pulse voltage is increased or a period of the sustain pulse is lengthened.

5. (Currently Amended) AThe plasma display device according to claim 1, wherein a repetition period of said second-waveform is longer than that of said first-waveform.

6. (Currently Amended) AThe plasma display device according to claim 223, wherein a repetition period of said second-waveform is longer than that of said first-waveform.

7. (Currently Amended) AThe plasma display device according to claim 326, wherein a repetition period of said second-waveform is longer than that of said first-waveform.

8. (Currently Amended) AThe plasma display device according to claim 1, wherein said first-waveform and second-waveform voltages include post-discharge voltages higher than said second and fourth voltages, respectively, and succeeding said second portion and said fourth portion, respectively.

9. (Canceled)

10. (Currently Amended) A The plasma display device according to claim ~~3~~23, wherein said first-waveform and second-waveform voltages include post-discharge voltages higher than said second and fourth voltages, respectively, and succeeding said second portion and said fourth portion, respectively.

11. (Currently Amended) A The plasma display device according to claim 1, wherein said ~~plasma display device further comprises a circuit for calculating said load factor and a control circuit for selecting one of said first-waveform and second-waveform voltages~~ is selected based upon said load factor, which is a ratio of a number of lighted ones of said plurality of discharge cells during said sustain discharge to a total number of said plurality of discharge cells.

12. (Currently Amended) A The plasma display device according to claim ~~2~~23, wherein said ~~plasma display device further comprises a circuit for calculating said load factor and a control circuit for selecting one of said first-waveform and second-waveform voltages~~ is selected based upon said load factor, which is a ratio of a number of lighted ones of said plurality of discharge cells during said sustain discharge to a total number of said plurality of discharge cells.

13. (Canceled)

14. (Currently Amended) A The plasma display device according to claim 4, wherein said plasma display device further comprises a circuit for calculating said load factor and a control circuit for controlling said address pulse voltage based upon said load factor.

15.(Currently Amended) A The plasma display device according to claim 11, wherein when T1=0, said sustain pulse voltage is selected-switched from the first-waveform to the second-waveform so as to generate said pre-discharge when said load factor exceeds a predetermined value.

16.(Currently Amended) A plasma display device according to claim 12, wherein when T1=0, said sustain pulse voltage is switched from the first-waveform to the second-waveform ~~selected so as to generate said pre-discharge~~ when said load factor exceeds a predetermined value.

17. Currently Amended) A plasma display device according to claim ~~13~~26, wherein when T1=0, said sustain pulse voltage is switched from the first waveform to the second waveform ~~selected so as to generate said pre-discharge~~ when said load factor exceeds a predetermined value.

18.(Canceled)

19. (Currently Amended) A The plasma display device according to claim 11, wherein said plasma display device further comprises a table listing a relationship among said load factors, numbers of said sustain pulses of said first-waveform and second-waveform voltages, and luminance of said discharge cells, and _____ at a boundary load factor at which a changeover is performed from said first-waveform voltage to said second-waveform voltage, numbers of sustain pulses of said first-waveform and second-waveform voltages are selected by using said table such that two luminances produced by discharges generated by said first-waveform and second-waveform voltages, respectively, are approximately equal to each other.

20. (Currently Amended) A The plasma display device according to claim 12, wherein said plasma display device further comprises a table listing a relationship among said load factors, numbers of said sustain pulses of said first-waveform and second-waveform voltages, and luminance of said discharge cells, and at a boundary load factor at which a changeover is performed from said first-waveform voltage to said second-waveform voltage, numbers of sustain pulses of said first-waveform and second-waveform voltages are selected by using said table such that two luminances produced by discharges generated by said first-waveform and second-waveform voltages, respectively, are approximately equal to each other.

21. (Canceled)

22.(Currently Amended) AThe plasma display device according to claim 13~~14~~, wherein said plasma display device further comprises a table listing a relationship among said load factors, numbers of said sustain pulses of said sustain pulse voltage, said address voltage and luminance of said discharge cells, and at a boundary load factor at which a changeover is performed in said address voltage, said address voltages are selected by using said table such that two luminances produced by discharges generated by said address voltages before and after said changeover, respectively, are approximately equal to each other.

23. (New) The plasma display device according to claim 3, wherein the sustain pulse voltage further comprises a second-waveform voltage, which is composed of a third portion having a major portion of a third voltage and a fourth portion having a major portion of a fourth voltage higher than said third voltage, and said first-waveform voltage and said second-waveform voltage satisfy the following conditions (i) and (ii):

(i) at least one of the following inequalities is satisfied: said third voltage > said first voltage, or a time duration of said third portion, T_3 ($T_3 > 0$), > a time duration of said first portion, T_1 ($T_1 \geq 0$), and

(ii) at least one of the following inequalities is satisfied: said fourth voltage > said second voltage, or a time duration of said fourth portion, T_4 ($T_4 > 0$), > a time duration of said second portion, T_2 ($T_2 > 0$).

24. (New) A plasma display device comprising:

a plasma display panel including at least a plurality of discharge cells each having at least an electrode pair for generating a sustain discharge for a light emission display; and

a power recovery circuit including a first inductance,

wherein a sustain pulse voltage, which is applied between said electrode pair in a respective one of said plurality of discharge cells to generate the sustain discharge, comprises at least a first-waveform composed of a first portion having a major portion of a first voltage and a second portion having a major portion of a second voltage higher than said first voltage wherein said first voltage is established by using a second inductance.

25. (New) The plasma display device according to claim 1, wherein at least one of the sustain discharges generated by the first-waveform and the second-waveform occurs at least twice consecutively.

26. (New) The plasma display device according to claim 4, wherein the sustain pulse voltage comprises a first-waveform voltage and a second-waveform voltage, and

said first-waveform voltage is composed of a first portion having a major portion of a first voltage and a second portion having a major portion of a second voltage higher than said first voltage, said second-waveform voltage is composed of a third portion having a major portion of a third voltage and a fourth portion having a major portion of a fourth voltage higher than said third voltage,

said first-waveform voltage and said second-waveform voltage satisfy the following conditions (i) and (ii):

(i) at least one of the following inequalities is satisfied: said third voltage $>$ said first voltage, or a time duration of said third portion, T_3 ($T_3 > 0$), $>$ a time duration of said first portion, T_1 ($T_1 \geq 0$), and

(ii) at least one of the following inequalities is satisfied: said fourth voltage $>$ said second voltage, or a time duration of said fourth portion, T_4 ($T_4 > 0$), $>$ a time duration of said second portion, ($T_2 > 0$).

27. (New) The plasma display device according to claim 23, wherein at least one of the sustain discharges generated by the first-waveform and the second-waveform occurs at least twice consecutively.

28. (New) The plasma display device according to claim 3, wherein two electrodes of said sustain electrode pair are supplied with two voltages opposite in polarity from each other, respectively.